Respiratory Apparatus

Objective: Students will investigate the respiratory apparatus in order identify the Anatomical Structures and Variants Amongst Species.

Warm Up:

1) What are the 7 openings of the Pharynx?

Respiratory Apparatus: Can be divided into two systems:

1. The Respiratory Passage
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   - 
   - 
   - 

2. The Sites of Gaseous Exchange
   - 
   - 
   - 

Respiratory Apparatus

1. Upper Respiratory Tract

2. Lower Respiratory Tract
Nose:

- External nares and their associated nasal cartilages,
- Nasal cavity with the nasal meatus and conchae,
- Paranasal sinuses.

Nasal Concha and Meatus
Paranasal Sinuses

- Maxillary sinus (sinus maxillaris),
- Frontal sinus (sinus frontalis),
- Palatine sinus (sinus palatinus),
- Sphenoidal sinus (sinus sphenoidalis),
- Lacrimal sinus (sinus lacrimalis)
  in the pig and ruminants,
- Dorsal conchal sinus (sinus conchae dorsalis) and
  ventral conchal sinus (sinus conchae ventralis)
  in the pig, ruminants and horse and
- Cellulæ ethmoidales in the pig and ruminants.

Larynx
Trachea:

The trachea extends from the cricoid cartilage of the larynx to its bifurcation. It consists of a series of C-shaped hyaline cartilages, connected by ligaments. The number of the tracheal cartilages varies among individuals:

- Horse: 48–60
- Ox: 48–60
- Sheep: 48–60
- Goat: 48–60
- Pig: 29–36
- Dog: 42–46
- Cat: 38–43

Lungs

- **Respiratory passageways:**
  - Principal bronchi (bronchi principales),
  - Lobar bronchi (bronchi lobares),
  - Segmental bronchi (bronchi segmentales),
  - Subsegmental bronchi (bronchi subsegmentales),
  - True and terminal bronchioli (bronchioli veri et bronchioli terminales).

- **Sites of gaseous exchange within the lungs are:**
  - Respiratory bronchioli (bronchioli respiratorii),
  - Alveolar ducts (ductus alveolares),
  - Alveolar sacs (sacculi alveolares) and
  - Pulmonary alveoles (alveoli pulmonis).

Lung Specie Variants

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Cat and Dog Lungs:

Pig Lungs

Ruminants Lungs
Horse Lungs

Cross Section View:

Blood Supply: